



Office of the Chief Technologist Update

for NAC Technology, innovation and Engineering Committee

Jim Adams, Deputy Chief Technologist

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TECHNOLOGY DRIVES EXPLORATION

#321TechOff



Office of the Chief Technologist Responsibilities

➤ Provides the strategy, leadership, and coordination that guides NASA's technology and innovation activities

- Develops and implements NASA technology policies, roadmaps, and Strategic Technology Investment Plan (STIP).
- Coordinates technology needs across the NASA Mission Directorates

➤ Documents, Tracks, and Analyzes NASA's technology investments

- Develops and Operates the TechPort Database, which provides capability to share information about NASA's technology investments within the Agency and to the public

➤ Coordinates with other Government agencies and the emerging commercial space sector to maximize benefit to the Nation

➤ Provides Agency-level leadership and coordination of the use of prizes and competitions to spur innovation

- Pilot new approaches to technology innovation and track their success

➤ Leads technology transfer and technology commercialization activities across the agency



Technology Roadmaps

Strategic Technology Investment Plan



Technology partnerships



Develop & operate the TechPort database



Tech Transfer, Partnerships and Commercialization Activities



Prizes, Competitions and Grand Challenge



Innovation Office

- **Technology Transfer** - supports an office at each of the field centers, as well as a full intellectual property management tool, the NASA Technology Transfer System (NTTS), and the Spinoff Program Office.
- **Prizes and Challenges** - keeps NASA at the cutting edge of new business practices, while supporting realistic pilots to enable implementation at scale. The function currently drives two major sets of innovation activities within NASA:
 1. Drive the appropriate use of prizes, challenges and crowdsourcing (open innovation) as additional, unique tools within NASA and the aerospace industry
 2. Facilitate, catalyze, and lead the implementation of special technology initiatives and strategic concepts, including Grand Challenges and Launch
- **Emerging Space** - provides economic intelligence on the emerging commercial space ecosystem. Advises NASA HQ on the economics of space development and commercial space

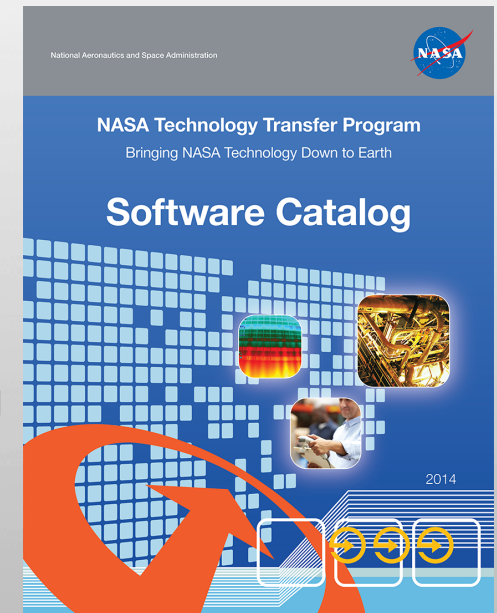
Strategic Integration

- **Roadmaps** – A set of documents that consider a wide range of needed technologies and development pathways for the next 20 years. The roadmaps focus on “applied research” and “development” activities.
- **Strategic Technology Investment Plan (STIP)**– An actionable plan that lays out the strategy for developing the technologies essential to the pursuit of NASA’s mission and achievement of National goals. This plan provides the prioritization and guiding principles of investment for the technologies identified in the roadmaps.
- **Technology Coordination**-Coordinates technology needs across the NASA Mission Directorates and communicates with other Government agencies to identify opportunities for technology collaboration
- **TechPort** – Web-based software system that serves as NASA’s integrated authoritative technology data source

Technology Transfer

Actively working to accelerate access to NASA technologies:

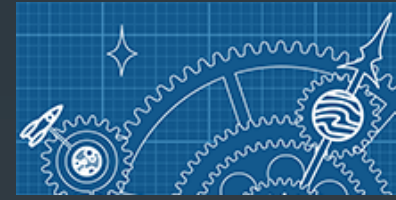
- New and streamlined policies and processes
- 35% increase in patent licensing
- 18% increase in software release
- Release of comprehensive Software Catalog, a first in federal government
- Building agency-level approach to technology marketing strategy.
- New Technology Transfer Portal: technology.nasa.gov



Prizes, Challenges and Crowdsourcing

- NASA Solve (www.nasa.gov/solve), launched in September 2014, is a one-stop-shop website for opportunities available to the general public to contribute to solving tough problems related to NASA's mission through challenges, prize competitions, and crowdsourcing activities.
 - The site has consistently generated approximately 30,000 unique visitors weekly.
 - Serves as a gateway for everyone to engage in the nation's aerospace program through prizes and challenges.
- NASA@work is an agency wide platform that allows NASA employees to easily engage across centers, helping each other solve important problems and issues within the agency.
 - Since the full launch of NASA@work (August 2011), the platform has awarded 66 challenges (18 in FY14), with a total of 157 winners (36 of those in FY14).
 - As of November 2014, NASA@work has 15,034 registered solvers (over 20% of the NASA population).
 - The platform community has grown over 30% per year and currently boasts over 699 active solvers.
- NASA's Center of Excellence for Collaborative Innovation (CoECI) works to leverage crowdsourcing-based challenges to enhance the mission of NASA and other federal agencies.
 - Since its inception in 2011, CoECI has executed 80 challenges (in FY 2014, 17 NASA challenges and 6 challenges for other federal agencies (CMS, OPM, EPA, and DoE)).

Video: <https://www.youtube.com/watch?v=T1Wqw9MpvdK>



Asteroid Grand Challenge

CY 2014

- Ten virtual seminars with asteroid experts, building a consolidated library of asteroid information
- Topcoder Asteroid Data Hunter Challenge to improve asteroid detection algorithm was completed based on the Space Act Agreement with Planetary Resources
- Space Act Agreement with Slooh to increase asteroid educational opportunities for the Slooh community to study asteroids
- Space Act Agreement with SpaceGAMBIT resulted in 10 funded asteroid projects which developed educational materials and amateur telescope hardware
- Two in-person forums of facilitated conversations with informed, but non-expert representative populations, in Phoenix and Boston about the Asteroid Initiative and the Journey to Mars



- Released NASA Report on 'Emerging Space: The Evolving Landscape of 21st Century American Spaceflight'
- Released NASA Report on 'Public-Private Partnerships for Space Capability Development'
- Publish monograph on 'Historical Analogs for the Stimulation of Space Commerce' with NASA History Office
- Selected 5 proposals from NRA on 'Economic Research for Space Development' out of 34 submissions, demonstrating strong interest in first-ever NASA general call for economics research.
- Performed multiple case studies and internal analyses evaluating and investigating terrestrial applications of microgravity for social and economic benefit that have informed ISS Program strategy.

